What is claimed is:

1.   1.   An apparatus, comprising:

2   a first electronic device adapted to perform

3   a training phase with multiple second electronic devices to calculate

4   parameters to enable substantially simultaneous spatial division multiple access

5   transmissions to multiple ones of the multiple second electronic devices; and

6   a data phase by using the parameters to perform the spatial division multiple

7   access transmissions.

1   2.   The apparatus of claim 1, wherein the first electronic device is further adapted to

2   perform an acknowledgement phase by using the parameters to perform substantially

3   simultaneous spatial division multiple access transmissions of acknowledgements to the

4   multiple ones of the second electronic devices subsequent to the data phase.

1   3.   The apparatus of claim 1, wherein the first electronic device is further adapted to

2   perform the data phase by:

3   transmitting substantially simultaneous data polls to the multiple ones of the

4   multiple second electronic devices through multiple antennas; and

5   receiving substantially simultaneous data responses from the multiple ones of the

6   multiple second electronic devices through multiple antennas.

1   4.   The apparatus of claim 1, wherein the first electronic device is further adapted to

2   perform the training phase by:

3   transmitting training polls to the multiple second electronic devices;

4   receiving training responses from the multiple second electronic devices through

5   multiple antennas;

6   processing the training responses received through the multiple antennas; and

7   calculating the parameters based on the processed training responses.

1   5.   The apparatus of claim 1, wherein the parameters comprise beam forming

2   parameters.

1   6.   The apparatus of claim 1, wherein the parameters are further to enable substantially

2   simultaneous spatial division multiple access receptions from the multiple ones of the

3   multiple second electronic devices.

1   7.   The apparatus of claim 1, wherein the first electronic device further comprises at

2   least four antennas to communicate with the multiple second electronic devices during the

3   training phase and the data phase.

1   8.   The apparatus of claim 7, wherein the first electronic device further comprises a

2   computing platform coupled to the at least four antennas.

9. The apparatus of claim 8, wherein the first electronic device further comprises at least four modulator/demodulators with at least one modulator/demodulator coupled between each of the at least four antennas and the computing platform.

10. The apparatus of claim 9, wherein the first electronic device further comprises multiple analog-to-digital converters and multiple digital-to-analog converters with at least one analog-to-digital converter and at least one digital-to-analog converter coupled between each modulator/demodulator and the computing platform.

11. A method, comprising:

transmitting a training poll to a first mobile device;

receiving a training response from the first mobile device;

transmitting a training poll to a second mobile device;

receiving a training response from the second mobile device;

calculating parameters based on the received training response from the first mobile device and the received training response from the second mobile device; and

using the parameters to enable spatial division multiple access transmissions to the first and second mobile devices.

12. The method of claim 11, wherein said using comprises:

transmitting a first data poll to the first mobile device and a second data poll to the second mobile device substantially simultaneously using spatial division multiple access techniques; and

5   receiving a response to the first data poll from the first mobile device and a

6   response to the second data poll from the second mobile device substantially

7   simultaneously.

1   13.   The method of claim 12, further comprising transmitting, subsequent to said

2   receiving, an acknowledgement to the first mobile device and an acknowledgement to the

3   second mobile device substantially simultaneously using the spatial division multiple

4   access techniques.

1   14.   The method of claim 13, wherein said calculating the parameters comprises

2   calculating beam forming parameters.

1   15.   The method of claim 13, wherein the parameters are further used to enable spatial

2   division multiple access receptions from the first and second mobile devices.

1   16.   A machine-readable medium that provides instructions, which when executed by a

2   processing platform, cause said processing platform to perform operations comprising:

3   transmitting a training poll to a first device;

4   receiving a training response from the first device;

5   transmitting a training poll to a second device;

6   receiving a training response from the second device;

7   calculating parameters based on the received training response from the first

8   device and the received training response from the second device; and

9   using the parameters to enable substantially simultaneous transmissions to the first

10   and second devices using spatial division multiple access techniques.

1   17.   The medium of claim 16, wherein said operations further comprise:

2   using the parameters to enable transmitting a data poll to the first device and a data

3   poll to the second device substantially simultaneously using the spatial division multiple

4   access techniques; and

5   using the parameters to enable receiving a data response from the first device and a

6   data response from the second device substantially simultaneously using the spatial

7   division multiple access techniques.

1   18.   The medium of claim 17, wherein said operations further comprise using the

2   parameters to enable transmitting an acknowledgement to the first device and an

3   acknowledgement to the second device substantially simultaneously using the spatial

4   division multiple access techniques.

1   19.   The medium of claim 16, further comprising using the parameters to enable

2   substantially simultaneous receptions from the first and second devices using the spatial

3   division multiple access techniques.